NOTE XXVIII.

LAND- AND FRESHWATER SHELLS COLLECTED BY Dr. H. TEN KATE IN SOEMBA, TIMOR AND OTHER EAST-INDIAN ISLANDS

DESCRIBED BY

M. M. SCHEPMAN.

(Plate 6).

The shells collected by Dr. ten Kate, are from localities which were still very imperfectly or not at all explored. To the latter category belongs the isle of Soemba, which has furnished a few very fine and interesting new species. Other species, though known to science, are remarkable for the novelty of their localities or because the habitat was not yet ascertained.

Considering that Dr. ten Kate travelled in behalf of the Dutch Geographical Society and that his chief occupations consisted of geographical and ethnological investigations, the number of species presented to the Leyden Museum must be called important. With respect to the literature, I must remark, that I have usually cited: for the Land-shells, the second volume of the Zoological Series of »Die preussische Expedition nach Ost-Asien", by Prof. Ed. von Martens, Berlin, 1867, and for the Melanidae and Neritinae, the monographs of these genera published by Dr. Brot and by Prof. von Martens in the second edition of Martini Chemnitz' »Systematisches Conchylien-Cabinet"; these works give a full account of the synonyms.

For a few species which remained doubtful, I have to acknowledge the kind assistance of Prof. von Martens, while Dr. Brot was so kind as to determine the Melaniae or to verify my determinations.

1. *Nanina cidaris* Lamarck.

Martens, Ostas. Landschn. p. 203.

Locality: Amarassi, Timor.

A few juvenile specimens, the sculpture of which is rather coarse, and consists of spiral striae and oblique rugosities.

2. *Nanina rareguttata* Mousson, var. *venusta* Beck.

Martens, Ostas. Landschn. p. 205; Taf. 9, fig. 5, 6.

Locality: Adonara.

This variety was formerly known from Flores, and was recently found also on Solor near Menanga (Martens: Zoologische Ergebnisse einer Reise nach Niederländisch Ost-Indien durch Prof. Max Weber; Mollusca, p. 228); it is new for Adonara.

3. *Nanina inquinata* v. d. Busch.

Martens, Ostas. Landschn. p. 207.

Locality: Amarassi, Timor.

The only specimen is more depressed than the figure given by Philippi (Abbildungen und Beschreibungen neuer Conchylien, I, p. 10, *Helix*, Taf. I, fig. 4). I should call the sculpture obliquely rugose, instead of »minutissime granulata"; the spots on the last whorl are transparent, calling in mind those of *N. rareguttata*. Prof. v. Martens, who determined this species, writes that though it was recorded from Java, this locality has little importance, as in former times every shell from the East-Indies was ascribed to that isle.

4. *Nanina baliensis* Mousson.

Martens, Ostas. Landschn. p. 207. — Mousson, Journ. Conch. 1857, p. 155; pl. VI, fig. 6.

Localities: Massoe, central S. E. Soemba, one fine specimen; near Waingapoe, one rather bad specimen; from the coast of Taimanoek, N. Soemba, and from a brook between Penfadoe Kfpfl and 'N datafl, bleached specimens (subfossil?).

I sent the fresh specimen from the first-mentioned locality to Prof. v. Martens, having no specimens of the typical *N. baliensis* for comparison, the shape being more depressed than in the figures given by von Martens and Mousson.

Prof. v. Martens writes: »sehr ähnlich *N. baliensis* Mouss.; ich habe Exemplare von Mousson, von denen eines oder zwei eine beinahe ebenso gedrückte letzte Windung haben, und die Färbung der Schnecke ist fast in der Mitte zwischen der ächten *baliensis* und var. *Waandersiana*". — As all the specimens have the same depressed form I name them:

var. *soembaensis*.

Shell more depressed than the type, especially the last whorl; colour purplish, last whorl with fragments of a yellowish epidermis, suture margined with opaque white, last whorl nearly angular.

Diam. maj. 33, min. 29, alt. 25 mill.

Compared with the figure of *N. baliensis* of Mousson, l. c., the last whorl is more depressed and the colour paler, approaching that of *N. Waandersiana* (l. c. fig. 1), which has however two brown bands, with an intermediate white one; the specimen of Massoe has a very narrow white band at the periphery, that of Waingapoe shows only the sutural line, if wetted; the other specimens are too much faded to recognize the colours.

5. *Nanina Stuartiae* Sowerby.

Martens, Ostas. Landschn. p. 208.

Localities: Lahoeroe/and Fialarang, central Timor.

Two specimens belong to the typical form, as they agree sufficiently with the measurements given by von Martens; another full-grown specimen and a younger one belong to a more depressed form. The typical specimens are richly banded, like fig. 462 of Reeve's Conchologia Iconica (*Helix*); two juvenile specimens seem to belong to the type; the smallest has a conspicuous angle at the periphery.

The depressed specimens differ from the type in having less bands, especially the full-grown one, which has only a narrow band at the suture, a broader one at the periphery and three fainter ones towards the umbilicus; the measurements of this specimen are:

Diam. maj. $43^1/_2$, min. 37, alt. 28, ap. lat. 23, alt. 22 mill.

The locality of *Nanina Stuartiae*, which remained doubtful (cf. v. Martens in his recent publication on the Mollusca collected by Prof. Weber, l. c. p. 227), has now been established.

6. *Nanina cochlostyloides*, n. sp.

Shell slightly umbilicated, globosely conical, obtuse at the apex, thin, whorls $5^1/_2$, the upper ones rather flat, the penultimate and ultimate inflated, rather smooth, with faint spiral striae, upper whorls pale yellowish or greenish, last whorl much dilated with a slight depression near the suture, which is consequently superficial at the upper whorls and deep at the lower ones, the last whorl is orange, yellow or green, dull, obliquely striated, slightly descending near the aperture, with a rounded angle near the suture and one towards the base, which is rather flat and has near the umbilicus, a small shining space; aperture rounded-rhomboid, lip rather thin, slightly thickened internally, columella obliquely descending, slightly reflected, interior of the aperture bright orange, citron yellow or white.

Diam. maj. 34, min. 30½, alt. 28 mill.

Localities: Ka-Tokawai, East Soemba, many specimens; Massoe, central S. E. Soemba, one broken specimen; seashore of Melolo, one empty specimen, and a subfossil one from a brook between Penfadoe Kǿpǿl and 'Ndataf.

This species is remarkable for its shape and colouring, which call in mind some species of *Cochlostyla*, the upper whorls presenting in both respects a strong contrast with the last whorl. The following varieties in colour may be distinguished:

1. Upper whorls pale green, with the last whorl more or less distinctly orange, interior of aperture bright orange.
2. Like the preceding, but upper whorls yellowish.
3. Upper whorls pale green, last whorl yellowish, interior of aperture citron yellow.
4. Like the preceding, but upper whorls pale yellowish.
5. » N°. 3 but interior of aperture white.
6. » » 5 » upper whorls whitish.
7. Upper whorls pale green, last whorl bright green, with darker streaks, bluish towards the aperture, interior of aperture white.

This species seems to be allied to *Nanina bimaensis* Mouss. and *N. halata* Mouss., but the apex is more obtuse than in those species, as figured in »Mousson, Mollusken von Java", plate 21, figs. 1 and 2, the last-named variety resembling *N. halata* in colour; the chief difference may be the biangular character of the last whorl, and the resulting contrast with the upper whorls.

The specimens vary slightly in shape and size.

7. *Helix argillacea* Fer.

Martens, Ostas. Landschn. p. 273.

Localities: Lamakera, Solor. — Lahoeroe, Fialarang and Amarassi, central Timor; Koepang, Timor; Neklioe, North west Coast of Timor. — Ka-Tokawai, East Soemba; Waingapoe, Massoe, seacoast of Melolo, Soemba. — Subfossil

from hills and from the rivershore near Waingapoe, mixed with sea-shells, and from a brook between Penfadoe Køpøl and 'N datas, Soemba.

From each of the above mentioned localities one or two specimens are collected; they vary much in size, the largest diameter being from 16 to 27 mill.

8. *Helix solorensis* v. Martens.

Martens, Ostas. Landschn. p. 277; Taf. 17, fig. 3.

Locality: Lamakera, Solor.

The specimens have a largest diameter from 16 to 17 millim. and are therefore slightly smaller than the smallest specimens recorded by von Martens. They vary much in the number of the spiral bands.

9. *Helix supracostulata*, n. sp.
(Plate 6, fig. 1).

Shell globosely depressed, with a covered umbilicus, only perceptible as a very narrow slit, solid, upper part distinctly plicately ribbed, base rather smooth; whitish, with a rather broad dark brown band at the periphery and a narrow one near the sutures, besides a number of paler bands above and below, varying much in the individuals; apex obtusely convex; whorls $4^1/_2$, slightly convex, last whorl descending abruptly in front. Aperture oblique, rounded; lip slightly expanded, thickened, white; columellar margin covering nearly completely the umbilicus, with a toothlike projection, outer margin near the peripherical band with a second very faint tooth, margins approximating, united by a thin callosity.

Diam. maj. $14^1/_2$, min. $12^1/_2$, alt. 11 mill.
» » 14, » 12, » 10 »
» » 13, » $10^1/_2$, » 9 »
» » 12, » 11, » $9^1/_2$ »

Localities: Ka-Tokawai, East Soemba, and »Soemba", without more definite locality.

This species approaches *Helix solorensis*, but the latter is larger, more umbilicated, nearly smooth and without teeth in the aperture; it resembles very much *H. Reinga* Gray (Reeve, Conch. Icon. fig. 772), but the aperture is rounded and not triangularly lunar. The sculpture in *H. Reinga* is called obliquely striated and no mention is made of a second tooth on the outer lip.

The specimens vary in shape and size and in the number of the bands, which in some specimens are nearly limited to the sutural and peripherical ones; in other specimens the whole shell is banded.

10. *Amphidromus latestrigatus*, n. sp.

Shell sinistral, ovately-conical, nearly smooth, perforated, apical whorl blackish-brown, next whorl rose-colour, the following whorls are white, then pale yellow, last whorl darker yellow, total number of whorls about $6^1/_2$; they are slightly convex, the four last with broad brown flames, which on the last whorl become greenish gray and are often confluent towards the base, sutures with a narrow white margin, accompanied by a blackish one (wanting in one specimen); aperture ovately oblong, angular above, rounded beneath, occupying less than half the length of the shell, bluish white interiorly; lip moderately expanded; columella nearly straight, like the lip dark rose-coloured, margins connected by a thin callosity of the same colour. Alt. $36^1/_2$, diam. maj. 21, ap. alt. incl. perist. $18^1/_2$ mill.
» 37, » » 19, » » » » 17 »

Localities: Massoe, central South East Soemba; near Waingapoe, Soemba.

This species differs from all the allied ones, by the broad flames and the fine rose-colour of the aperture; this last peculiarity is also found in *A. suspectus* Martens, *A. Annae* Martens and in the next species, but they differ in so many other respects, that they may be easily recognized.

The measurements taken from specimens from Massoe,

show that they vary in form. In nearly all the specimens the flames of the upper whorls are traversed by a narrow zone of the ground-colour; the yellow colour of the last whorl is more or less bright.

A juvenile specimen from Massoe has the space near the umbilicus rose-colour, with two brown spiral bands, beneath the periphery. This and two adult specimens from the same locality, are in the finest condition, the other are more or less bleached.

11. *Amphidromus reflexilabris*, n. sp.

Shell sinistral, elongately conical, slightly striated, imperforated, varying much in colour, yellow with green streaks, pale or orange yellow, with the upper whorls yellowish or brown, apex yellow or black brown, upper whorls nearly always with brown flames or blotches, lower whorls commonly with a white zone beneath the sutures; whorls 6, slightly convex; aperture elongately-ovate, angular above, angularly rounded and slightly effused beneath, occupying with the peristome about half the length of the shell, interior white; lip strongly reflected, so as to reach and even partly to cover the backside of the shell and forming a canal having the appearance of a very thick peristome; columella thickened, like the lip of a pale rose-colour, margins connected by a thin callosity.

Alt. 39½, diam. maj. 18½, ap. alt. incl. perist. 29½ mill.
» 42, » » 21, » » » » 21 »
» 50, » » 23½, » » » » 27 »

Locality: Amarassi, Timor.

This species varies very much in size and colour, no two specimens being alike; the largest (somewhat bleached) one is totally yellow excepted the peristome, the smallest is yellowish orange, with white sutural zone, a dark apex and a few faint brown blotches ranged in two rows on the upper whorls; a third full-grown specimen and a juvenile one are yellow with more or less green, disposed in

streaks on the last whorl, and have a white sutural zone; the full-grown specimen has a yellowish apex and two rows of brown blotches on the next whorls, which cease abruptly on the penultimate whorl; the younger specimen has a dark apex and dark flames, of which only a few are divided by a narrow white spiral zone; the penultimate whorl is partly brown-shaded. This species shows affinities to many other species of the East-Indian Archipelago, the upper whorls of some specimens recall in mind *A. contrarius* Müll., the green whorl resembles some varieties of *A. furcillatus*. They differ from every known species by the uncommon development of the peristome, which is most characteristic and suffices to recognize the species at first sight.

12. *Amphidromus contrarius* Müller.

Martens, Ostas. Landschn. p. 363; Taf. 20, fig. 7a, 7b, 7c.
Localities: Koepang and Amarassi, Timor.

One full-grown and one juvenile specimen from Koepang, belong to the variety figured by von Martens at fig. 7c. The only specimen from Amarassi is dark towards the aperture, which is not completely developed and has a purple brown margin.

13. ? *Amphidromus suspectus* v. Martens.

Martens, Ostas. Landschn. p. 362; Taf. 21, fig. 8.
Locality: Soemba.

Only one juvenile specimen has been collected; the third whorl shows faint traces of dark blotches. Prof. v. Martens writes that it differs from his specimens by the vivid citron-yellow colour, and the distinctly limited dark rosy spot near the umbilicus, which characters call in mind *A. laevus* Müll., where the rosy spot extends however to the black band. As all the specimens of *A. laevus* I compared, have more or less distinct bands on the upper

whorls, if there is any paiuting at all, and the specimen from Soemba has faint blotches like some specimens of *A. contrarius* Müll., and as, according to an information formerly received from v. Martens, this occurs also with *A. suspectus*, I have thought it best to give this only specimen this name, till more and full-grown specimens are obtained.

14. *Limnaea javanica* v. Hasselt.

Martens, Conchologische Mittheilungen, Band I, p. 87.

Locality: Waingapoe, N. Soemba.

One rather small specimen seems to belong to the typical form.

var. *porrecta* v. Martens.

Martens, l. c. p. 89; Taf. 16, fig. 9, 10.

Locality: Amarassi, Timor.

One fine specimen, slightly less elongated than the figure given by v. Martens, and a worn one, besides a small specimen in alcohol.

15. *Limnaea perlevis* Conrad.

Conrad, Proceedings Acad. Nat. Sciences Philadelphia, Vol. 5, p. 11.

Localities: Lakes of Soesoek and Ainiba, central Timor.

Several specimens from the above mentioned localities. Edgar A. Smith (Freshwater shells of Australia; Journ. Linn. Soc. Vol. 16, p. 271) and Tapparone Canefri (Fauna Malac. della Nuova Guinea, p. 244) take *L. perlevis* as a synonym of *Lessoni* Desh. (Magasin de Zoologie, Vol. I, 1831, Moll. p. 16; pl. 16); this figure is more globose; according to the description the shell has »la couleur et la transparence de la corne blonde qui serait légèrement teintée de vert".

Prof. von Martens, who compared the shells with those of the Museum in Berlin, says that the specimens resemble

more *L. perlevis*, that both may be however varieties of one species. The specimens are much smaller than the figure of *Lessoni* Desh. and of *Strangei* Ph. which should also be a synonym, and may be not full-grown; so I give them the name applied by Prof. v. Martens.

16. *Physa moluccensis* Lesson.

Martens, Ueber die Ostasiatische Limnaeaceen; Malak. Blätter, 1867, p. 211 (*Physa moluccensis*, p. 218).

Localities: Freshwater lakes ~~near~~ Soesoek and Ainiba, central Timor.

The specimens are slightly more inflated than a specimen from Delhi, Timor, collected by Prof. v. Martens and kindly sent me for comparison; for the rest they agree sufficiently.

17. *Cerithidea ornata* A. Adams.

Reeve, Conchologia Iconica, sp. 22.

Locality: Rivers of North West Soemba.

18. *Melania punctata* Lamarck.

Brot, Mon. *Melania*, in Martini Chemnitz, Syst. Conch. Cabinet, II^{e} Ausg. p. 168; Taf. 20, fig. 4, 4^{a}.

Locality: Koepang, Timor.

Numerous specimens are collected at the just named locality; they are all covered with a very thick incrustation. They vary in sculpture and painting, some specimens being almost without brown spots or streaks, while others are richly ornamented. Many have rather distinct spiral striae and a few have also small ribs on the upper whorls; though this does not agree with the description, Dr. Brot, after examination, left them with the more typical specimens.

19. *Melania clavus* Lamarck.

Brot, Mon. *Melania*, l. c. p. 175; Taf. 21, fig. 17.

Locality: Hills near Waingapoe, Soemba; one subfossil specimen.

20. *Melania ten Katei*, n. sp.
(Plate 6, fig. 2).

Shell subulately-turreted, solid, grayish or yellowish horn-colour, often with purple-brown blotches above and below the suture, apex in the adult slightly decollated; whorls 7 or 8, slightly convex, almost smooth, or upper whorls covered with spiral striae, which occupy only the lower part of the lower whorls and the central part of the last whorl.

The upper whorls form a regular cone; last whorl inflated and with an obtuse angle a little below the suture, base eventually with a few very faint striae. Aperture ovately oblong, slightly angular above, rounded beneath; lip simple, slightly sinuous; columella slightly curved.

Alt. 32, diam. maj. 13, apert. alt. $11^3/_4$, lat. 6 mill.
» 26, » » 10, » » 9, » 5 »

Localities: Waingapoe; Massoe; a brook near Lentang, N. Soemba; Isle Groot Bastaard.

The specimens from the last-named locality are more yellowish and smaller than those of Soemba, the spire is less eroded and the last whorl less inflated; they are probably young shells. Those of Soemba seem to be allied to *M. moesta* Hinds, but the whorls are not so high and are more inflated; the angle is scarcely perceptible at the peristome. *M. sobria* has small ribs on the upper whorls, *M. costellaris* on the contrary is plicated on the lower whorls.

The measurements are taken from the largest specimen, the only one found near Massoe, without epidermis, and from a fresh specimen from Lentang.

21. *Melania* spec.

Localities: Rivers of N. W. Soemba, Isle Groot Bastaard.

The specimens have the appearance of being young, they resemble in sculpture some of the foregoing varieties, but the striae are less distant from each other; they have brown flames and are faintly banded about the periphery, with a darker band near the base of the last whorl.

22. *Melania turriculus* Lea.

Brot, Mon. *Melania*, l. c. p. 239; Taf. 25, fig. 7, 7a.

Locality: Isle Groot Bastaard, near the northern coast of Flores.

Besides by the sculpture described by Dr. Brot, the specimens are covered with microscopical spiral striae.

23. *Melania* spec.

Localities: Massoe, Waingapoe, hills and rivershores near Waingapoe, mixed with sea-shells (subfossil), Soemba.

Dr. Brot did not know this species, but thought that more material ought to be compared before it could be described as new or regarded as a variety of any described species. The shell resembles *M. turriculus* Lea in sculpture, but it is rather different in form.

24. *Melania scabra* Müller.

Brot, Mon. *Melania*, l. c. p. 266; Taf. 27, fig. 14, 15.

Localities: Rivers of N. W. Soemba; Massoe, central S. E. Soemba; Waingapoe; hills and rivershores near Waingapoe, Soemba, mixed with sea-shells (subfossil).

The specimens belong to a much elongated variety; those of the last named localities have no spines on the last whorls.

25. *Melania armillata* Lea.

Brot, Mon. *Melania*, l. c. p. 309; Taf. 32, fig. 5.

Localities: Hills and rivershores near Waingapoe, Soemba, mixed with sea-shells (subfossil).

26. *Melania lateritia* Lea.

Brot, Mon. *Melania*, l. c. p. 319; Taf. 33, fig. 1.

Localities: Massoe; rivers of N. W. Soemba; hills and rivershores near Waingapoe (subfossil).

The specimens from N. W. Soemba and some of the subfossil ones are more elongated than the figures of Brot. They differ however from the next species by the stronger granules.

27. *Melania Mauiensis* Lea.

Brot, Mon. *Melania*, l. c. p. 322; Taf. 33, fig. 7, 8.

Localities: Karita river, Melolo, Massoe, Waingapoe, hills and rivershores near Waingapoe, Soemba.

Slightly varying in being more ore less elongated and more or less distinctly sculptured.

The specimens from the last-named locality are subfossil.

28. *Truncatella valida* Pfeiffer.

Martens, Ostas. Landschn. p. 162.

Locality: Baä, Rotti.

The specimens are smaller than those described by Dr. Pfeiffer (Monographia Auriculaceorum, p. 184), the largest being only 9 mill., like those collected by Prof. v. Martens. Several specimens, though full-grown, are still slightly smaller.

29. *Cyclotus soembaensis*, n. sp. (Plate 6, fig. 3).

Shell globosely depressed, thick, moderately umbilicated, rather smooth, with short radiating striae near the suture, which become very faint towards the periphery; whitish, with red-brown meshes and fulminating streaks, leaving on the largest part of the shell only small oval spots of white, and forming large blotches near the suture; apex horn-colour; spire moderately elevated; whorls about 5,

very convex; sutures slightly margined, deep; last whorl rounded, slightly ascending and enlarged towards the aperture. Aperture nearly perpendicular, circular, peristome thick, double; upper part of the exterior margin angular. Interior of the aperture with a callosity for the operculum.

Diam. maj. 20, min. 16, alt. 17 mill., apert. $9^3/_4$ mill.

Locality: near Waingapoe at the Makwai river, Soemba.

This species, which belongs to the subgenus *Pseudocyclophorus*, I sent to Prof. v. Martens, who declared it to be new, resembling *C. guttatus* Pfr. in painting, but much less depressed, and allied in form to *C. amboinensis*, which is much smaller and has the last whorl descending. *C. politus* Sow., which recently is recorded from Flores by v. Martens, is much more globose.

30. *Helicina exserta* v. Martens.

Martens, in Zool. Ergebnisse einer Reise in Niederl. Ost-Indien durch Dr. M. Weber: Mollusca, p. 220; Taf. 12, fig. 16—19.

Locality: Baä, Rotti.

The only specimen, which is relatively higher than those described l. c., I sent for comparison to the author, who writes, that on account of the prominent keel, it should be considered as *H. exserta*, and not as *H. oxytropis* Gray.

The measurements of these allied species are:

Hel. oxytropis: diam. maj. 9, alt. 6—7 mill.
» » : » » 8, » 5 »
Helic. exserta, from Saleyer: diam. maj. $10^1/_2$, alt. 6 mill.
» » , » Rotti: » » $8^1/_2$, » $5^3/_4$ »

31. *Helicina sculpta* v. Martens, var. *minor* v. Martens.

Martens, Ostas. Landschn. p. 167; Taf. 4, fig. 17.

Locality: Baä, Rotti.

The lirae are rather distinct, one specimen has at least five lirae above the keel.

32. *Neritina variegata* Lesson.

Martens, Monogr. *Neritina,* in Martini Chemnitz, Syst. Conch. Cab. IIe Ausgabe, p. 78; Taf. 10, fig. 11—17.

Locality: Koepang, Timor.

The specimens have only a faint indication of the orange spot near the columella.

33. *Neritina turrita* Chemnitz, var. *strigillata* Lamarck.

Martens, Monogr. *Neritina*, l. c. p. 105; Taf. 11, fig. 18, 19.

Locality: Soemba.

34. *Neritina squarrosa* Recluz.

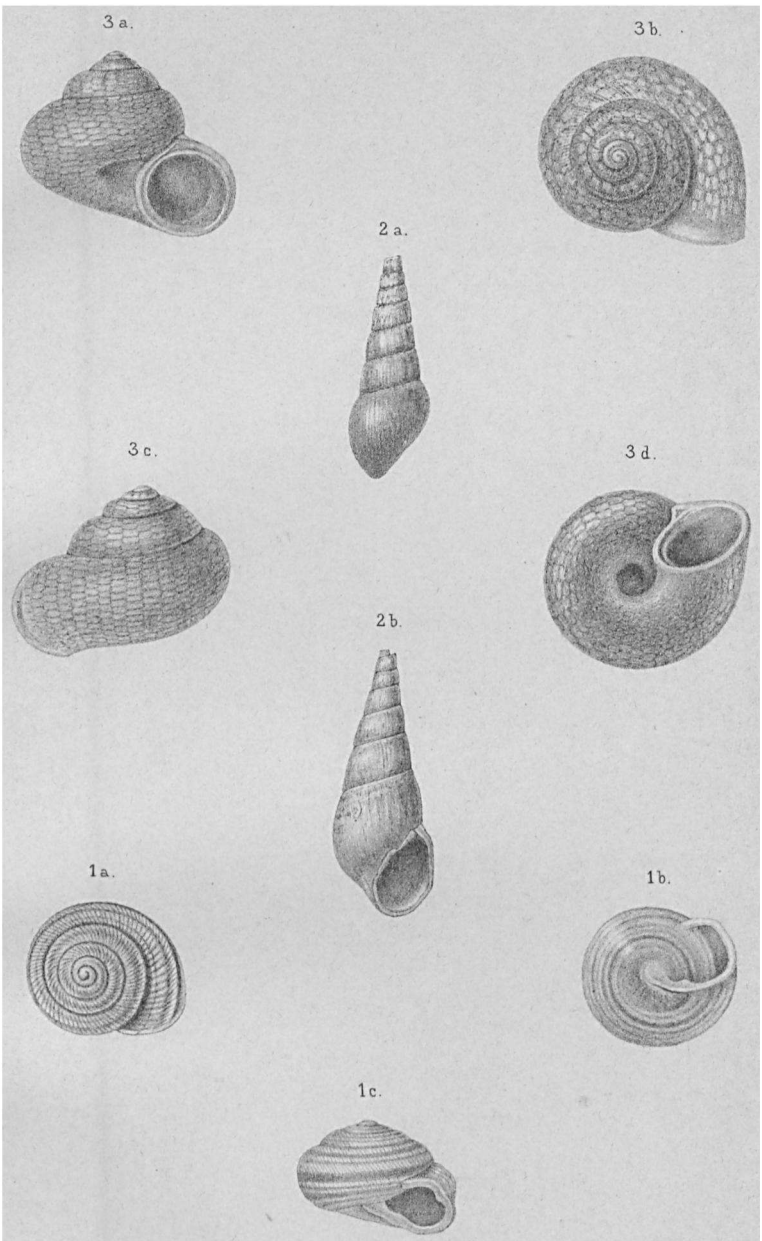
Martens, Monogr. *Neritina*, l. c. p. 162; Taf. 16, fig. 13—18.

Locality: Koepang, Timor.

The specimens of this species and of *N. variegata* are covered with a thick incrustation, so that they cannot be recognized before cleaning.

This and the preceding species of *Neritina* were not recorded by Prof. v. Martens from the mentioned localities.

Rhoon near Rotterdam, February 1892.



Dr. H. W. de Graaf del. A. J. Wendel lith. P.W.M.Trap impr.

1. Helix supracostulata *Schepm.* 2. Melania Tenkatei *Schepm.*
3. Cyclotus soembaensis *Schepm.*